

A black and white photograph of a pharmacist's workspace. In the foreground, a hand holds a small bottle of 'SALICYLIC ACID' over a counter. Several other bottles are visible, including 'Glyrate-Uroff', 'Salicyl', and a large bottle of 'Pulvules No. 168 QUININE SULFATE'. The background is filled with stacked cardboard boxes, some labeled 'FRAGILE' and '1-19'.

A SCIENCE SERVICE PUBLICATION

Do You Know?

The longitudinal shrinkage of wood is only about 1/100 of the transverse shrinkage.

To move one infantry division with equipment requires approximately 1,350 railroad cars, or 65 special trains.

Starfish, worst enemy of oysters and oyster men, now face destruction from a new "depth weapon," a machine for spreading quicklime on oyster beds.

Grindstones cut from sandstone blocks are still in demand because they are better for certain industrial purposes than any of the new artificial abrasive grinding wheels.

Mexico, a large exporter of the cocoa bean, will no longer have to import the finished products, cocoa and cocoa butter; Mexico City now has a modern cocoa-processing plant.

The percentage of rubber obtained from guayule increases with the age of the plant, from 4% at one year up to 17% to 22% when the plant is between five and seven years old.

Heat is lost through the outside walls of a house by all three methods of heat transference; radiation through space, conduction through solids, and gravity circulation of heated air.

Hold this page at right angles to your line of vision to avoid eyestrain; the visibility of print is reduced as much as 70% when it is placed flat on a desk and read from an upright position.

Question Box

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How many biotin vitamins have been discovered? p. 76.

PUBLIC HEALTH

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What precautions are necessary if you use rabbit meat? p. 67.

Peanut oil, now being used for cooking and salad oil, is used industrially in shaving lotions, cosmetics, soaps, dyes and axle grease; and medically, among other uses, in massage for infantile paralysis victims.

Nature has provided an ideal for military clothing experts to aim at, in endowing the duck with an all-weather protective covering, of ideal warmth yet light weight, thoroughly ventilated and impervious to moisture.

American Indians have sent more than 11,000 men to war, out of a population of less than 400,000, creating a manpower shortage on reservations.

The Russian rubber dandelion, *kok-saghyz*, has been sown at 20 experimental stations in the United Kingdom from Scotland to the south of England, and quantities have been sent to Australia, New Zealand, India and Canada as well as to the U. S. A., for experimental planting.

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MEDICINE

Painless Childbirth

Hundreds of mothers have had babies in comfort and safety without loss of consciousness thanks to new method of anesthesia.

➤ MORE THAN 700 mothers in the last year have had their babies in complete comfort and safety, without pain and without loss of consciousness, thanks to a new method of childbirth anesthesia. Details of the method, developed by Dr. Robert A. Hingson and Dr. Waldo B. Edwards, of the U. S. Public Health Service, are reported in the *Journal of the American Medical Association* (Jan. 23).

"Continuous caudal analgesia" is the technical name of the new method for banishing the pain of childbirth. It consists of continuous injection near the base of the spine of a pain-killing chemical, metycaine. The drug temporarily blocks the nerve pathways for pain but does not affect those controlling muscles needed for voluntary delivery of the baby.

The injections are started while the mother is in her room in the hospital.

She does not become unconscious but can eat, sleep, read or talk to visitors until just before the baby is ready to be delivered. At this time she is taken to the delivery room, but the anesthetic injection continues until she is ready to be taken back to her room after the baby's birth.

"One hundred per cent effective" and "perfect painless childbirth" without harmful effect on mother or child are among the comments of doctors who have used the method, as quoted by the editor of the *A.M.A. Journal*. The editor considered the results reported by Dr. Hingson and Dr. Edwards so significant that he promptly assembled, for the benefit of physicians generally, the opinions of other doctors having experience with the method. Although it has been in use for only a year, the experience in the opinion of the A.M.A. editor, seems to "warrant the belief that it constitutes a

real advance in securing relief of pain for mothers during childbirth."

The doctors who devised the method report using it or supervising its use in 589 cases with no complications or deaths among the mothers. Three of the babies died, but not as a result of the anesthetic. Use of the method in another 20 cases, with three failures for two of which the exact cause was difficult to determine, is reported in the same issue of the *Journal* by Dr. Thomas G. Gready, Jr., and Dr. H. Close Hessel-tine, of the University of Chicago and Chicago Lying-In Hospital. From Syracuse (N. Y.) University College of Medicine 85 successful cases are reported and from the Mayo Clinic another 50. Altogether it has been used in about a score of institutions.

The method, it is emphasized by all the doctors reporting on it and by the editor of the *A.M.A. Journal*, should be used only in hospitals and only by competent physicians and anesthetists specially trained to give this type of anesthetic.

Science News Letter, January 30, 1943

PUBLIC HEALTH

Learn How to Use Rabbit Meat Safely

➤ WITH THE SHORTAGE of other kinds of meat, wild rabbits are likely to be used for food more than usual this year. Rabbit hunting is good sport and the meat is a nutritious supplement to the diet, particularly valuable right now, the New York State Health Department points out. Contact with wild rabbits, however, does bring a certain risk of getting sick with tularemia or "rabbit fever."

Hunters, housewives, chefs and others who handle wild rabbits should know the simple precautions which will protect them against this distressing disease. Measures suggested by the New York Health Department follow:

1. Leave the too-easily secured rabbit alone. If a rabbit is an easy shot, the chances are it is ill, and may be infected with tularemia.
2. Do not clean the rabbit if you have any sores, cuts or other lesions on your hands. Even if you have no such lesions, it is well to wear rubber gloves when cleaning the rabbit and to wash the gloves thoroughly with soap and hot water before taking them off. Infection is usually acquired through contact with the blood or internal organs of rabbits and in almost every single case which has occurred thus far in New York State,



"CONSTELLATION"—New largest and fastest land-based cargo or transport plane, is the new Lockheed powered by four Wright Cyclone engines. It is said to be able to carry as many as 57 persons all the way across the continent in 9 hours.

there is a history of a cut or other lesion on the hand through which the infection apparently penetrated.

3. Be very careful in the process of cleaning the rabbit not to cut yourself with the knife, puncture a finger on a broken rib, or in some other way cause a break in the skin.

4. Cook the rabbit meat thoroughly. The infection can be acquired by eating insufficiently cooked infected rabbit meat.

The precautions apply, of course, to the dressing and cooking of rabbits bought at market as well as those you or some relative or friend shoots.

Science News Letter, January 30, 1943

MEDICINE

Heart Disease No Bar To Industrial Employment

► HEART disease need not bar the patient in every case from industrial employment. Many thousands of heart patients and probably most of the 10% or so of young men rejected for the army because of heart and blood vessel disease would qualify physically for positions in industry.

Statements to this effect were made by both Dr. Rufus B. Crain, of Rochester, N. Y., and Dr. O. F. Hedley, of the U. S. Public Health Service, before the committee on cardiac clinics of the the New York Tuberculosis and Health Association.

From experience at the Eastman Kodak Company, Dr. Crain reported evidence that "with careful placement and medical supervision" persons with heart disease and high blood pressure "can be continued in employment without risk.

"This experience should encourage the hiring of individuals in the same category as new employees," he declared.

The right to work when physically handicapped is one of the practical, far-reaching gains for labor and society which is being reached through the war and which should be held after the war, Dr. Hedley pointed out.

In the case of heart disease the importance of continuing to make it possible for the patients to work can hardly be exaggerated, because with the aging of the population, the numbers with heart disease will continue to increase.

In the future, society will be faced with the choice of obtaining employment for the increasing group of heart disease patients or otherwise providing a means of livelihood through some form of taxation.

Science News Letter, January 30, 1943

GENERAL SCIENCE

40 To Meet in Washington

These 11 girls and 29 boys (proportion determined by ratio of boys and girls entering the contest) are being invited on all-expense trips to Washington, D. C. Feb. 26 to March 2, to attend the Science Talent Institute, where one boy and one girl will be awarded \$2,400 Westinghouse Grand Science Scholarships, 6 boys and 2 girls will be awarded \$400 Westinghouse Science Scholarships and \$3,000 additional in Westinghouse Scholarships will be awarded at the discretion of the judges.

CALIFORNIA

Los Angeles Green, Joseph M. 16 Dorsey High School
Redondo Beach Rehtin, Eberhardt 16 Redondo Union High School

CONNECTICUT

Bridgeport Wojciechowski, Wanda Clara 16 Bassick Senior High School
Lakeville Sargent, Charles Philip 17 Hotchkiss School

FLORIDA

Winter Haven Folger, Robert Lancaster 16 Winter Haven High School

ILLINOIS

Carbondale Robertson, Claron Atherton 17 University High School
Chicago Palombi, Robert Edmund 17 St. Mel High School
Oak Park Foster, Elizabeth Jane 16 Oak Park-River Forest High School

IOWA

Ames Lauer, Gloria Indus 17 Ames High School

MAINE

Bethel Sawyer, Constance Bragdon 16 Gould Academy

MISSOURI

Independence Dickinson, Hillman 16 William Chrisman High School
St. Louis Lauenstein, Milton Charles 16 Southwest High School

NEW MEXICO

Las Cruces Gill, John Ellis 17 Las Cruces Union High School

NEW HAMPSHIRE

Exeter Kohl, Henry Hiram 16 Phillips Exeter Academy
Concord Macy, Josiah, Jr. 17 St. Paul's School

NEW JERSEY

Irvington Haftel, Howard William 17 Frank Morrell High School
Trenton Mark, Robert Burton 17 Trenton Central High School

NEW YORK

Garden City Kunkel, Joan Lillian 17 Garden City High School
Geneva Pederson, Donald Penhallegon 16 Geneva High School
Irvington Cassidy, Judith Mary 15 Irvington High School
New Rochelle Ronder, Joan Leslie 16 New Rochelle High School
New Rochelle Schiff, Ray (Reinhart) 16 New Rochelle High School
New York City Rosenblatt, Murray 16 Evander Childs High School
Nyack Killingbeck, Marguerite Grace 17 Nyack High School
Rome McLoughlin, James Gray 16 Rome Free Academy

OHIO

Athens Hammerle, William Gordon 15 Athens High School
Columbus Piper, William Weidman 17 Grandview Heights High School
Dayton Ens, Catherine Clara 17 Julianne High School
Shaker Heights LeLievre, William Boyd 16 Shaker Heights High School

OKLAHOMA

Norman Ortenburger, Arthur Irving 15 Norman High School
Tulsa Willcockson, Roy 16 Central High School

PENNSYLVANIA

Johnstown Harris, Donald Roswell 17 Central High School
Johnstown Strehler, Bernard Louis 17 Central High School
Lancaster Perot, Charles Poultney, IV 17 J. P. McCaskey High School
Matamoras Boop, Wayne Ellsworth 17 Matamoras High School
Philadelphia Fox, Joseph Milton 16 Overbrook High School
Philadelphia Kurfuerst, Leonard Charles 16 North East Catholic High School

WEST VIRGINIA

Clarksburg Quermann, Thomas Richard 17 Washington Irving High School

WISCONSIN

Madison March, Virginia Ellen 16 West High School
Shorewood Lean, Elizabeth Ann 17 Shorewood High School

GENERAL SCIENCE

Talent Search Winners

Eleven girls and 29 boys awarded trips to Washington to attend Science Talent Institute. To receive \$11,000 in Westinghouse Scholarships.

► ELEVEN girls and 29 boys have been invited to Washington, February 26 to March 2, to compete for the Westinghouse Science Scholarships in the Second Annual Science Talent Search conducted by Science Clubs of America, administered by Science Service. They will spend 5 days together at the Science Talent Institute in Washington.

The trip winners were selected as the result of a strenuous competition in which superior seniors of all secondary schools in the United States were invited to participate. The 40 winners were selected from more than 15,000 entrants. More than 3,400 of these students completed a science aptitude examination, submitted recommendations and scholarship records and wrote an essay on "Science's Next Great Step Ahead."

The trip winners come from 37 localities in 16 states. Entries were received from every state in the union.

Many of those, who come to Washington for the Science Talent Institute the last of February on the all-expense trips, will be selected for scholarships which will allow them to go to any college of their own selection, so that they may continue science or engineering training. One boy and one girl will be awarded \$2,400 Westinghouse Grand Science Scholarships (\$600 a year for four years), while 6 boys and 2 girls will be awarded \$400 Westinghouse Science Scholarships and \$3,000 more in Westinghouse Science Scholarships will be awarded at the discretion of the judges.

Geographical Spread

Although the winners were selected without regard to geographical considerations, the results showed that two high schools among the more than 25,000 have more than one winner among the 40. The New Rochelle High School at New Rochelle, N. Y., furnished 2 trip winners, a boy and a girl.

Johnstown High School in Johnstown, Pa., had two boys among the winners. Philadelphia, Pa., also furnished two winners: a boy from Overbrook High School and a boy from North East Catholic High School. Two high

schools that sent winners to Washington in the First Annual Science Talent Search are represented again. These schools are Shorewood, Wisc., High School and Oak Park-River Forest, Ill., High School.

Four of the winners go to schools some distance from their homes. Their homes are in Hanover, N. H., Lewiston, Me., Newburgh, N. Y., and Warrenton, Va. They go to school respectively in Lakeville, Conn., Bethel, Me., Exeter, N. H., and Concord, N. H.

65% Head Classes

More than half, 65%, of the Science Talent Search trip winners ranked first in their graduating classes. Twenty-four of the winners were members of science clubs and four of them were club presidents.

The ages of the trip winners range from 15 to 17.

Many of the trip winners have already chosen their fields of study. Sixteen of them wish to go into some branch of engineering. Their choices include electrical, chemical, and aeronautical engineering. Five have chosen to go into some kind of scientific research while one plans to be a mathematical physicist, three plan to study medicine, one plans to do science teaching and three wish to be physicists. Three plan to be chemists and two are interested in becoming biochemists.

The proportion of boys and girls who submitted completed entries in the Second Annual Science Talent Search determined the distribution of boys and girls among the trips awarded. Girls accounted for 26% of the entries compared with 22% in the First Annual Science Talent Search completed last July. The scholarships, with the exception of the two grand scholarships, will be distributed among boys and girls in the same ratio.

Honorable Mentions

Science Talent Search judges have authorized the issuance of a list of 260 boys and girls who have been awarded honorable mentions in the Second Annual Science Talent Search. A copy of this list will be sent to any official of an institution of higher learning who desires it.

"A major need for America today is the discovery and development of scientific ability among boys and girls now in high school," the Science Service announcement states. "Real ability for creative research and engineering is rare. Many who do not now have the opportunity to develop their scientific talents will be discovered and made available for America's future progress through this Science Talent Search."

"This is more than a scholarship contest. It is a major step toward making available potential scientific talent to important tasks in war and peace. Within the next five years, either in war or peace, boys and girls now in high school must begin to take leadership in scientific research and engineering."

The annual Science Talent Search is conducted by Science Service as one of the activities of Science Clubs of America. Awards are provided and the Science Talent Search made financially possible by the Westinghouse Electric & Manufacturing Company, a leader in scientific research, engineering and manufacture in the electrical industry, as a contribution to the advancement of science in America.

Science News Letter, January 30, 1943



FOR SAFETY—This hat, designed to keep the soft flowing hair of women war workers from getting into whirling machinery, was created with an eye to beauty as well. Transparent plastic Lumarith forms the visor and net holds the hair in place. The hat is said to be unaffected by oil or grease or changes in temperature and is non-inflammable. It is made by M. B. Price Associates and distributed by the Mine Safety Appliance Company.

MEDICINE

War on Polio

Scientists fight on five fronts against the child-crippling disease, infantile paralysis. In chemical warfare division, curing drug is sought.

By JANE STAFFORD

► MEDICAL SCIENTISTS have opened five fronts in the war against infantile paralysis, dreaded crippling disease of children and young adults, known also as poliomyelitis or polio.

On one front the war is being pushed by what might be called the chemical warfare division. These are the men and women who laboriously test chemical remedies, one after another, in the hope of finding one that will destroy the disabling virus of polio after it has entered the body. This is one of many lines of research sponsored by the National Foundation for Infantile Paralysis, funds for which are being collected through the President's Birthday Celebrations.

The search for a chemical cure for polio was enormously helped by the discovery of one strain of the poliomyelitis virus which would grow in the cotton rat. Previously, the only animals that could help the polio fighters in this search were monkeys, which are expensive and could not be obtained by the hundreds that were needed. But even with the cotton rats, there were difficulties to be surmounted. Dr. Don W. Gudakunst, medical director of the National Foundation, describes these as follows:

Would Not Mate

"These animals had to be trapped alive and shipped to the laboratory. This was anything but satisfactory. The wild animals had many diseases of their own which interfered with the infantile paralysis studies. The first problem was one of breeding them in captivity free from disease. But when pairs of the wild rats were placed in a cage, almost invariably morning found but one survivor. They would not mate; instead they fought to the death.

"In the laboratory there were scientists with a knowledge of animal psychology and the difficulty was solved by the simple expedient of dipping both male and female in a creosote bath. Once their odors were alike, they mated."

With plenty of rats finally available, the scientists started testing existing

drugs which had proved effective in fighting pneumonia, streptococcus infections and other diseases.

Unfortunately, four years of such painstaking research has not yet yielded a cure for infantile paralysis. None of the known drugs and none of the many modifications of existing sulfa compounds made for this chemical war on polio has proved effective. But the search goes on. Tonight more animals will be infected, more drugs given, for tomorrow might be the historic day on which a chemical remedy for polio is to be found.

Chemical warfare is directed toward curing polio. Prevention is another front on which this disease war is waged. On this front, fight the epidemiologists, the "detectives of medicine."

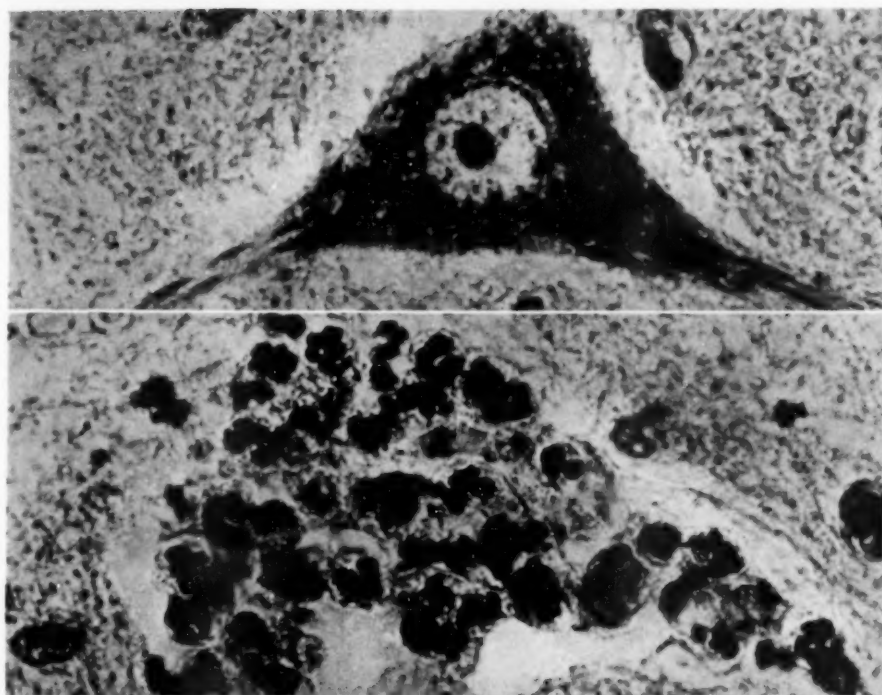
It is known that the virus is excreted

from the body through the bowel discharges of apparently every patient, no matter how mild the disease. It is known that many persons in contact with these patients will also be discharging the virus and many will persist as virus carriers for months. Sewage, privies, rivers polluted with sewage, all yield virus when tested by modern laboratory methods. Flies trapped in infantile paralysis patients' homes and also flies trapped far from these homes during epidemics may be laden with the virus.

These clues suggest that infantile paralysis might be spread through infected food or polluted drinking water, like typhoid fever, and that its spread might be stopped by sanitary measures which stopped the epidemics of typhoid fever we used to have every summer and fall. But the medical detectives are not satisfied that this is the answer. They point out that the pattern of spread of infantile paralysis as it occurs in nature does not suggest that it is usually spread through water supplies. There has not



SISTER KENNY—The new treatment for polio is being demonstrated by its proponent; use of hot applications and other techniques prevent crippling. This photograph is from the *Journal of the American Medical Association*.



POLIO'S DAMAGE—Microscopic view above shows the normal nerve cells, the lower view shows the effect of the disease.

been a single large outbreak reported having the well-known characteristics of a water-borne outbreak of disease.

So the medical detectives search on, confident that some day they will solve the mystery of how the disease spreads and then be able to suggest ways of prevention.

Third, fourth and fifth fronts of the polio war are fought by doctors, nurses, physiotherapists, mental hygienists, teachers, parents and, above all, by the patients themselves. On these fronts are concentrated efforts to help the patient recover from infantile paralysis without crippling or deformity.

On this front is that valiant fighter, Miss Elizabeth Kenny, the Australian nurse whose "inherent mechanical ability" is credited by Dr. Gudakunst with having had much to do with the development of her now widely known and revolutionary method of treating infantile paralysis.

Meanwhile, for those already crippled with a short arm or leg or other deformity, surgeons have found many ways of correcting the trouble, such as alterations in the patients' tendons, bones, muscles and joints.

Science News Letter, January 30, 1943

to which the year's huge crop of about 984,000,000 bushels was added. The total is enough to meet all our bread needs for two years, even if no wheat at all should be harvested in the meantime.

In response to Department of Agriculture urgings and the stimulus of reasonably good meat prices, farmers and stock raisers have built up their herds to new highs. The cattle population reached nearly 75,000,000 head a year ago, and despite heavy slaughter is being maintained. Pigs topped the hundred-million mark with five million extra to spare—enough for nearly five-sixths of a whole hog apiece for every person in the country, except that we're sending part of our pork chops and bacon overseas to our armed forces and our fighting allies.

Use Surplus for Feed

Use of some of our surplus wheat for feeding livestock and chickens is recommended by Secretary Wickard, so that we may boost meat, milk and egg supplies, all of which need to be maintained at the highest attainable levels.

An additional outlet for wheat is the international pool set up by the four great wheat-raising countries, the United States, Canada, Australia and Argentina, for the eventual relief of war-ruined countries. This pool now consists of 100,000,000 bushels, and is to be increased as need arises.

With a cotton surplus of more than 11,000,000 bales on hand, and the mills unable to spin it up much faster than they are doing now, increases in cotton production are not being encouraged. Instead, cotton farmers are asked to shift over to peanuts (for oil) as far as possible, and also to substitute long-staple for short-staple varieties. Lower yields of the important co-product, cottonseed oil, are to be offset by increased production of other vegetable oils, notably soybean, flaxseed and peanut.

Tobacco stocks on hand are so large that no increase in acreage in this crop has been held justified, except in two types, flue-cured and Maryland, on which lend-lease requirements call for increases of about 10% over the 1942 figures.

Heaviest possible emphasis is being placed on vegetable production, both by large-scale professional growers and home gardeners. Military and lend-lease shipments call for immense quantities of dehydrated vegetables; and an intensive drive for the 1943 Victory gardens will soon be under way.

Science News Letter, January 30, 1943

AGRICULTURE

Need More Food Grown

Annual report of Secretary of Agriculture stresses need for more of all kinds of food except wheat. Steady on cotton and tobacco.

► **LESS WHEAT**, more meat; also more vegetables, eggs, dairy products, vegetable oils; steady on cotton and tobacco. This in a nutshell is the array of goals for American farmers in 1943, as summarized in Secretary of Agriculture Claude R. Wickard's annual report, just issued.

It is quite different from the agricultural aims of the last war period, when all the accent was on wheat. Ever since 1918, wheat has been produced in excess in this country, and with the war-caused total eclipse of export markets it has been piling up. The national carry-over as of July, 1942, was 633,000,000 bushels,

PHYSICS

**What Makes Paper Curl?
Remedial Measures Studied**

► **WHAT** makes printing paper curl? Frederick T. Carson and Vernon Worthington, scientists at the National Bureau of Standards, have found that tendency to curl depends on such things as shrinkage during manufacture, weight and how porous the paper is to air. But moisture is of greatest importance.

If moisture content of the paper could be kept the same as the surrounding air, the scientists explain, most annoyances of paper curl could be avoided. As humidity changes from day to day, one part of the sheet expands or contracts more than another part—and up it curls.

Some printing plants find it worth while to air-condition their plants, thus maintaining an equilibrium between the paper and surrounding air.

To help choose remedial measures for those who must fret with curling paper, a test has been developed for maximum curl which involves floating bits of paper on water.

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METALLURGY

**Tiny Mirror Reveals
Data on War Metals**

► **BOUNCING** a beam of light off a tiny metal mirror, scientists now observe metals changing into alloys and learn in a few minutes the rate at which metals diffuse through one another.

Developed by Dr. Howard S. Coleman and Prof. Henry L. Yeagley, physicists at Pennsylvania State College, the new method replaces tedious processes which took months and years. It helps speed the study of war metals, just as other phases of the war program have been accelerated.

New information will be obtained about improving alloys, the metal mixtures so important in the war.

Studies may reveal more about the resistance of metals to heat and suggest ways of improving this quality.

This same process might be used to prevent metal corrosion, the scientists suggest. Fundamental things that occur in aging metals are being revealed.

The scientists use thin metal films only about a fourth the thickness of ordinary typewriter paper. First the metals are vaporized, then deposited atop one another as films on a glass slide, thus forming a mirror.

They are then removed from the

vaporization chamber, heated to the desired temperature and the diffusion rate observed.

The diffusion of these thin films usually occurs in a few minutes, compared to the many months often required by old methods which used larger quantities of metal. This also involved prolonged heating at a temperature of several hundred degrees while only slight heat is required by the new method. Sometimes even the heat of the hand is enough to start diffusion of thin films.

To follow the speed of diffusion, the amount of light reflected from the mirror film is measured. A normal metal surface has a certain reflecting power. But as one metal spreads through another the amount of reflected light is changed. This change is measured by a recording instrument called a galvanometer.

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MEDICINE

**War Medicine Aided by
Grants from Commonwealth**

► **A THIRD** of the medical research gifts from the Commonwealth Fund during the past year went into studies related to the war, the Fund's annual report just issued reveals.

"Six of these," the report states, "should contribute to the knowledge of shock, four to the control of infectious diseases, one or more to aviation medicine."

"This is a technician's war and the techniques of medicine are essential to the winning of it," the report comments.

"The Fund is selecting for current support chiefly projects in research which promise direct usefulness to war medicine, offer significant contributions to the physiological underpinnings of medicine, or rest on long-continued consecutive observation that cannot be interrupted without letting partly won facts slip back out of reach."

Since the war began the Fund has set aside \$845,000 for war relief, war service and related purposes.

Total appropriations from the Fund last year were \$1,777,396. This has been divided between war gifts and gifts to support constructive efforts for health and scientific advance.

Assets at the end of the year were over \$50,000,000. The Fund was established by Mrs. Stephen V. Harkness in 1918 and its endowment was later increased by gifts from its president, the late Edward S. Harkness.

Science News Letter, January 30, 1943

IN SCIENCE

AGRICULTURE

**Soviets Raise Black
Cotton; Eliminates Dyeing**

► **BLACK** cotton is a new variety recently originated by Russian plant geneticists, a bulletin from the Soviet embassy states. One advantage which this cotton has, together with other varieties with colored lints ranging from reddish to green, is the eliminating of the dyeing process. It is believed that the natural black will be a faster color than the black of dyed cottons.

American cottons with green and brown lints have been known for some time but are not grown on a large scale because their yield is considerably lower than the white-linted varieties. Our colored cottons are used principally in certain regional handicrafts industries.

Science News Letter, January 30, 1943

PLANT PHYSIOLOGY

**Seed Treatment Chemical
Fails To Increase Yield**

► **HOPES** of greatly increasing vegetable and field crop yields through chemical treatments of seeds are somewhat damped by a report (*Botanical Gazette*, Dec.) on negative results of a large number of experiments by Dr. William S. Stewart and Charles L. Hamner of the U. S. Department of Agriculture.

These two researchers tried a number of growth-regulating substances, including several commercial preparations intended for seed treatment, on the seeds of a considerable assortment of plants, ranging from field crops like corn, wheat and soybeans to garden vegetables such as radishes, carrots and squashes. They grew them under a wide variety of soil and climatic conditions in three places—the Department's great experiment station at Beltsville, Md., at the University of Chicago, and at Lake Geneva, Wis.

In all cases, they report, they were unable to detect any significant increase in yield as a result of the chemical treatment of seed.

Science News Letter, January 30, 1943

THE FIELDS

AGRICULTURE

New York Soybeans Sent To Soviets for Trial

► **FOUR** bushels of Cayuga soybeans, a variety developed by Cornell University plant breeders, have been shipped to the Soviet Union through the Russian War Relief for trial plantings as a feed and food crop. Cool weather and short growing seasons in Russia resemble conditions of New York state. The Cayuga variety matures in any part of New York up to 1,600 or 1,800 feet elevation.

Soybeans of the Corn Belt will not mature in New York or in the cool areas of Russia.

The Cayuga's yield is from 20 to 25 bushels or more of dry beans to the acre. It may help to solve the food production problems of a Russia despoiled of her great grain-producing area in the Ukraine.

Science News Letter, January 30, 1943

PUBLIC HEALTH

Prevention Is Greatest Hope For Mental Hygiene

► **GREATEST** hope for the future in reducing the burden of mental sickness and its costs lies in prevention, Homer Folks, secretary of the State Charities Aid Association and chairman of the Temporary Commission on State Hospital Problems, declared at the 100th anniversary of the opening of the Utica State Hospital in Utica, N. Y.

Many millions of dollars, he stated, could be saved each year in the state of New York alone from the costs of construction and maintenance of state hospitals for mental illness by a vigorous campaign of prevention. New York's present annual budget for mental hygiene institutions is \$40,000,000. Of this, three-quarters is spent for state hospitals alone.

New York made one of its worst financial errors, he believes, when, having wisely taken on the maintenance of the hospitals for the insane, it thought itself unable to carry on an effective system of diagnosis and treatment through clinics.

Establishment, right now, of diagnostic and treatment clinics or "Mental Health Centers" is the "great white hope for the state of New York and every other state in the Union in this mental hygiene field," he declared.

For the future there are three other important things we may hope for in this field, he said. These are: more and more fully trained psychiatrists in our hospitals; new methods of treatment; and a better understanding of the environmental factors in the cause of mental sickness.

Science News Letter, January 30, 1943

ENGINEERING

Next Ice Cakes That Will Eject Themselves

► **THE OLD** problem of how to get the ice cubes out of the tray without melting a lot of good ice, on which a number of patents have been taken out, now has been solved in a clever way by making the freezing process itself do the job. The method is disclosed in U. S. patent 2,296,327 issued to Thomas Barish of Jamestown, N. Y.

The tray consists of a number of individual round cups joined together by connecting webs of metal. The cups have corrugated sloping sides much like the tin cups used for baking small cakes. They are composed of two metals one of which contracts more with decreasing temperature than the other. The whole cup is made of the other metal, and strips of the more contractile metal are overlain on the bulges of the corrugations. The consequence is that as the temperature sinks, the corrugations are more or less straightened out, thus increasing the volume of the container and drawing the walls away from the ice. This is exactly opposite to the behavior of the usual ice tray. The metal contracts as the temperature falls and the walls tightly grip the ice.

In addition, the bottoms of the cups bulge downward, and are also composed of the two metals, the more contractile being on the outside. Hence when the temperature drops, the bottom straightens out and may even bulge inwardly, thus lifting the ice cake still further from the outwardly sloping walls. This action if desired can be made so strong, the inventor says, as to make the ice cake actually pop out of the receptacle.

The preferred metals are nickel-steel and copper, so that for this convenience we shall probably have to wait until the emergency is over.

Science News Letter, January 30, 1943

PUBLIC HEALTH

Meningitis More Frequent Than for Past Five Years

► **MANY MORE** cases of meningococcus meningitis are being reported by state health officers to the U. S. Public Health Service each week than have been reported at this season any time in the last five years.

The total number, 278, reported for the week ending Jan. 9, is higher than for any week since 1928, which is the earliest year for which the federal health service has comparable weekly figures.

Total number of cases for the week ending Jan. 16, latest on which reports are in, was 275, which is from two to five times as many cases as were reported in the same week during the previous five years. The five-year median figure for this week in January is only 46.

During the year just ended (1942), there were 3,774 cases reported altogether. This is a larger total yearly figure than any year since 1937, when there were 5,390 cases.

At present, and for some time past, the cases have been confined to the extreme eastern part of the country and the Pacific coast.

Influenza cases are also a little high. Total for the week of Jan. 16 was 4,329, representing an increase of several hundred over the previous week and being higher than the 3,894 of the five-year median.

For the same week, Jan. 16, Pennsylvania reported 10 cases of smallpox, Indiana 13, and Ohio 3.

Science News Letter, January 30, 1943

AERONAUTICS

Flight Testing Advances Win Award for MacClain

► **OUTSTANDING** work in flight testing of aircraft engines and development of the engine torque indicator has won the Octave Chanute Award for A. Lewis MacClain, aircraft engine test pilot and engineer of the Pratt and Whitney Aircraft Division, United Aircraft Corporation, East Hartford, Conn.

The engine torque indicator, which measures brake horsepower, was the first practical device for accurately measuring the power output of a plane engine during flight.

Presentation of the award was made at the Honors Night Dinner of the Institute of Aeronautical Science in New York on January 26.

Science News Letter, January 30, 1943

ASTRONOMY

Moon Eclipse Coming

Though only partial, eclipse will be most interesting sight visible in February evening skies. Bright planets on view.

By JAMES STOKLEY

► A PARTIAL ECLIPSE of the moon just after midnight on the night of Feb. 19 is the chief astronomical event of the month. But that night may well be cloudy. However, on any clear night during the month we have a fine display of bright stars and three planets. Look at the accompanying maps. These show the appearance of the skies at 11 p.m., your own war time, at the beginning of the month, and 10 p.m. on the fifteenth.

They do not, however, show the brightest planet now visible. This is Venus, which sets earlier. Look to the southwest just after the sun has set, and there you may see it, low in the heavens. Even at sunset it is only some 15 degrees above the horizon, so by the time it begins to get dark it will be even lower. But it is so bright, about minus 3.3 on the astronomer's scale, that it should easily be seen despite its disadvantageous position, provided, of course, the western sky is clear.

Jupiter is the brightest planet shown on the map. Its magnitude is minus 2.1, and it is in the constellation of Gemini, the twins. Nearly as bright as Jupiter, however, is the star Sirius, in Canis Major, the great dog, which shines in the south. Unlike the planets, which are visible only because of the sunlight they reflect to us, Sirius is itself a distant sun, shining with its own light.

Brighter Than Saturn

Next in order of brightness is the star Capella, in Auriga, the charioteer, which is almost exactly overhead at the times of our maps. It is slightly brighter than Saturn, our next planet, which appears to the west in Taurus, the bull. It is somewhat hard, however, to compare the brightness of the two bodies. The star is a scintillating point of light, while the planet has a steadier glow, and a telescope shows it as a small disk rather than a point.

To the left of Saturn is another star, Aldebaran, which marks the eye of the bull. And below and to the left of Alde-

baran is the great constellation of Orion, recognizable easily because of the row of three stars which form the belt of this famous warrior. This group is about halfway between Aldebaran and Sirius. South of the belt stars is Rigel, and north of them is Betelgeuse.

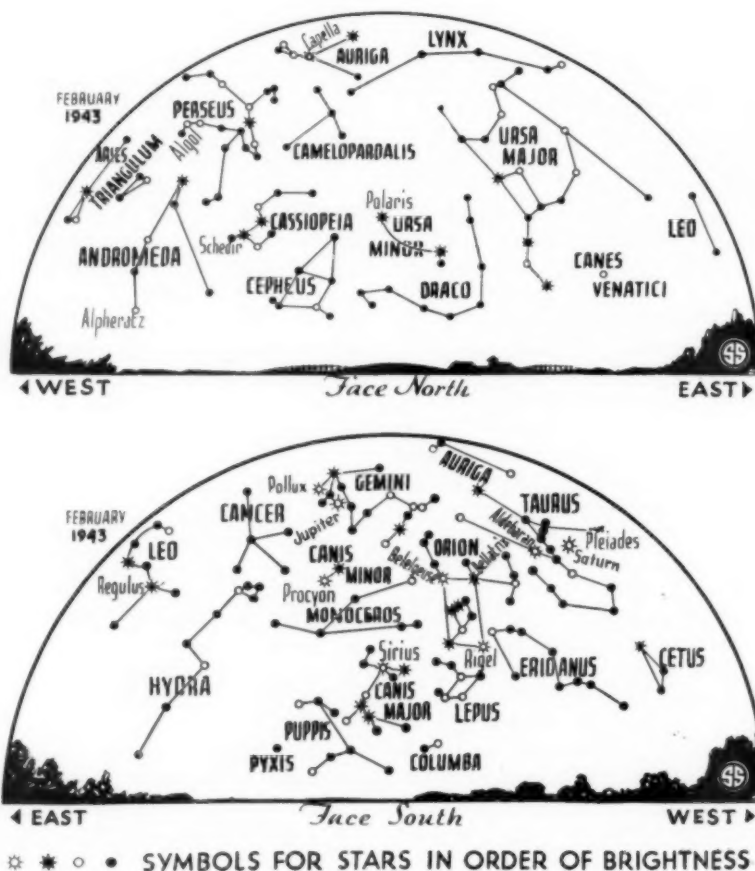
Three other stars of the first magnitude are indicated. One is Procyon, in Canis Minor, the lesser dog, just below Jupiter. Then there is Pollux, which is itself one of the twins. And, over to the east, is Regulus, in Leo, the lion.

There are two other naked eye planets besides those we have mentioned above. Mercury, the innermost of the sun's family, will be farthest east of the sun on Feb. 18, and will be visible low in the southeast just before sunrise. Its brightness is about the same as that of Saturn. Mars is in the same part of the sky, and

may also be glimpsed in the southeast before dawn, though it is much fainter than Mercury.

As the moon swings around us in its monthly journey, there is always one occasion when it is practically between earth and sun. This is the time of new moon. Then, about two weeks later, it is in the opposite direction from the sun, and we have full moon. Both moon and earth cast shadows into space, and it might seem that at every new moon, the shadow of that body would fall on our planet, giving us an eclipse of the sun. This does not happen because the path in which the moon revolves around the earth is not quite in the same plane as that in which the earth goes around the sun. Generally the moon's shadow misses the earth at new moon. For similar reasons the shadow of the earth does not usually fall on the moon when it is full, and give us a lunar eclipse.

During February, however, the moon has reached one of the nodes of its path, which is a place where it goes through



the plane of the earth's orbit. And therefore, when the moon is new on Feb. 4, its shadow will sweep across the earth.

In the western part of the United States and Canada the sun will set partially eclipsed, and at least a partial eclipse will be visible over most of the north Pacific Ocean.

The path of totality, with strict neutrality, favors both us and our enemies. The core of the moon's shadow touches earth first in Manchuria near Harbin. Here the sun will rise totally eclipsed. Then the shadow crosses Siberia north of Vladivostok, the Japan Sea, the island of Hokkaido, one of the northern islands of Japan. Next it swings over the Pacific, south of the Aleutian Islands, and over Kodiak and Anchorage, Alaska, where the eclipse will be seen, if it is clear, low in the west. The shadow leaves the earth in the Yukon.

Perhaps our soldiers in Alaska will witness the event, though the chances of good weather are not very favorable. The same is probably true in Japan. It is perhaps unfortunate that the Japanese do not retain their primitive superstitions and fear an eclipse. In that case, it might have an effect on the progress of the war. (See SNL, Jan. 23 for map).

Two Weeks Apart

Two weeks later, on the night of Feb. 19, when the moon has made half a revolution around the earth, it will still be near enough to the node to pass partly through the shadow of the earth. Thus will come a partial eclipse of the moon.

At 10:43, EWT, on the evening of the 19th, the eclipse begins its first stage, when the moon enters the outer part of the earth's shadow. Not much will be noticed for about an hour, when it gets close to the umbra, the inner part. At 12:04 a.m., on the 20th, the edge of this shadow will begin to creep across the lower left-hand edge of the moon. At 1:38 a.m. the moon will be most nearly immersed in the shadow, with 77% of its diameter being covered. At 3:13 a.m. the moon leaves the umbra, the last trace of it being seen at the western edge.

This eclipse will be seen throughout North and South America, and parts of Europe as well.

As usual, the edge of the earth's shadow will at all times be an arc of a circle, because the shadow is cast by a spherical body.

Also, the shaded part will have a coppery red color, because it will be illuminated by light which has been bent into the shadow by the earth's atmosphere.

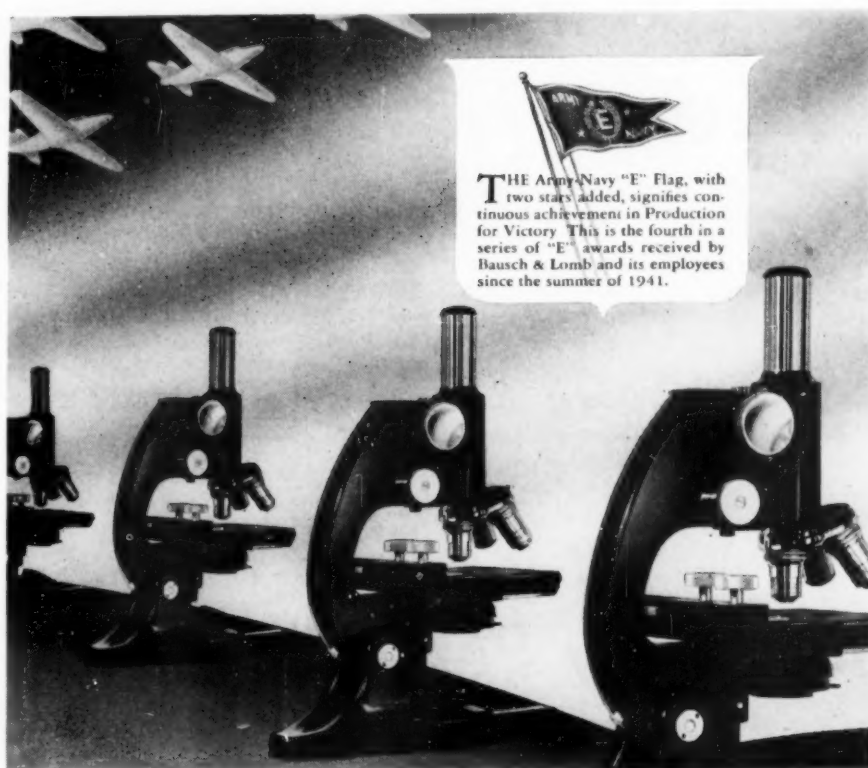
This process extracts some of the blue from the sunlight, and makes it red. This same thing gives the setting sun its red color.

Celestial Time Table for February

Feb.	EWT
2	3:09 a.m. Moon passes Mars.
3	11:25 a.m. Moon passes Mercury. 8:00 p.m. Moon nearest; distance 227,940 miles.
4	7:29 p.m. New moon. Total eclipse of sun, visible in Pacific Ocean area.

6	5:37 a.m. Moon passes Venus.
11	8:40 p.m. Moon in first quarter.
12	9:17 p.m. Moon passes Saturn.
16	4:00 a.m. Moon farthest; distance 252,120 miles. 8:57 a.m. Moon passes Jupiter.
18	6:00 a.m. Mercury farthest east of sun, visible for a few days as morning star.
20	1:45 a.m. Full moon. early a.m. Partial eclipse of moon.
27	2:22 p.m. Moon in last quarter. Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, January 30, 1943



Sentries Along America's Battle Lines

IN white-walled hospital laboratories, in industrial research laboratories, in field laboratories, microscopes in the hands of American doctors and scientists are on twenty-four hour sentry duty.

Here, on America's second front, microscopists are waging an unending war against enemies of health and production, enemies that are invisible to the unaided eye.

Bausch & Lomb Microscopes and B&L specialized instruments of optical research and control are doing an invaluable job today.

From the toolmaker's microscope that helps to maintain the standards of accuracy and perfection to which America's war

effort is geared, to the microscope of the medical officer fighting the hazards to health which, if unchecked, could put a division out of action, B&L instruments, through the men using them, are serving America.

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PHYSIOLOGY

Eight Biotin Vitamins

Vitamin believed to play important role in cancer, has seven sister vitamins. Discovery means that research in field must be re-evaluated.

► BIOTIN, widely distributed vitamin believed by some to play an important role in cancer, has seven sister vitamins, or vitamers, Dr. Dean Burk and Dr. Richard J. Winzler, of the National Cancer Institute and the National Institute of Health, have discovered.

Vitamers, they explain in their report to *Science* (Jan. 15), is a newly coined term for compounds that act to overcome a given vitamin deficiency in one or another animal, plant or microorganism. Several compounds with vitamin D activity are known to exist, and there are likewise several vitamers for vitamin K and for some of the other vitamins.

Discovery of the vitamers for biotin, Dr. Burk explained, means that a great deal of the work on the role of biotin in nutrition and in relation to the cancer problem will have to be re-evaluated. Some of the results obtained may, for example, be due to one of biotin's vitamers rather than to biotin.

The biotin vitamers are: miotin, tio-

tin, rhiotin, pimelic acid and three derivatives of biotin (methyl ester, sulfoxide, and diaminocarboxylic acid). Miotin, tiotin and rhiotin have not yet been identified chemically but are believed to be very closely related to biotin.

Miotin, tiotin and diaminocarboxylic acid do not combine with avidin, the chemical in raw egg white which combines so greedily with biotin that it or raw egg whites have been fed to patients to produce a deficiency of biotin in the hope of curing cancer. The theory behind this attempt to cure cancer rests partly on a report that cancer tissue contains a high content of biotin.

It may be that miotin, rather than biotin, is the growth-stimulating substance used by cancer tissue. If this should be so, it would change the line of attack on cancer, but there is no evidence yet on this point.

Miotin, in addition to failing to combine with avidin, is unlike biotin in being easily destroyed or changed by heat, whereas biotin is heat stable.

Science News Letter, January 30, 1943

MEDICINE

Saved by Penicillin

Patient dying of blood poisoning was restored by germ-killer produced from mold. Blood was freed of germs in 22 hours.

► PENICILLIN, a germ-killing substance produced by mold, has saved the life of a 33-year-old man at the Mayo Clinic. His case was reported at a staff meeting of the clinic by Dr. W. E. Herrick, Dr. Dorothy H. Heilman and Dr. H. L. Williams.

The patient was dying of what the layman would call blood poisoning. His illness started with a soreness on the right side of his nose. Within a week the entire right side of his face was swollen, red and painful, and the side of his nose was discharging pus. Both eyelids were swollen and red, and his right eye was displaced downward and outward and he could not move it normally. His temperature was 104 degrees

Fahrenheit. At this time he entered the hospital but in spite of moist, hot packs on his face and large doses of sulfadiazine, his condition grew worse and he was unable to open his eyes.

When the laboratory reported staphylococcus germs were in his blood, the doctors stopped the sulfadiazine and started giving penicillin. Some two quarts of salt solution containing penicillin were given each 24 hours for two days, the solution being dropped into the man's vein at the rate of 25 to 30 drops per minute.

Within 22 hours after starting the penicillin his blood was free of germs. Two hours later his temperature had dropped to 100 degrees Fahrenheit, he

felt better and was able to eat well, although he was still unable to open his eyes. After six days of treatment his temperature was normal, he could open and move both eyes normally, and except for loss of vision in his right eye, appeared and felt well. The loss of vision is believed due to swelling of the orbit which produced neuritis of the optic nerve.

"It seems likely that penicillin was responsible for recovery of the patient in the case reported," the doctors stated.

Penicillin was discovered by an English scientist, Dr. Alexander Fleming. It was first used to treat disease in man in 1941. Only limited amounts have been available for trial on patients.

Besides its ability to overcome certain disease germs, it has the advantages of diffusing readily into practically all the tissues of the body and of being relatively nontoxic and safe to use.

The Mayo Clinic doctors believe it offers considerable advantages over other remedies now available for treating severe infections but point out that to avoid loss of time and discouraging results, this new remedy should be used only for infections with germs known to be vulnerable to it.

Science News Letter, January 30, 1943

ENGINEERING

New Sashless Storm Window Is Easily Installed

► THOSE who want to save more fuel can quickly install storm windows which require no lumber sash. Just attach two three-inch strips of picture-frame type molding to the bottom of the window. Then fit a pane of ordinary window glass into the molding. Pressing the glass pane over the regular window, secure the sides and top of the glass with other strips of molding. To complete the job, run a strip of all-weather tape around the edge of the storm window.

This Victory storm window is mounted on the outside of the upper half of a window and the inside of the lower half. This permits opening and closing of the window for ventilation which is not possible when the storm window is mounted in a sash of its own.

The new window is recommended by engineers of the Federal Housing Administration who estimate that installation costs about two dollars.

The regular storm sash should be used when available, OPA officials emphasize, but as a temporary wartime measure the sashless window will make substantial savings of fuel.

Science News Letter, January 30, 1943

PHARMACY

Quinine for War

Drug stores of the nation are contributing their supplies of the anti-malarial drug to the armed forces in war zones.

See Front Cover

► QUININE from the nation's drug stores are being contributed to a quinine pool for the armed forces under a plan inaugurated by war agencies.

This week's SCIENCE NEWS LETTER cover shows the first quinine shipments being inspected at the American Institute of Pharmacy in Washington. These drugs are ammunition to blitz an important enemy of our fighting men.

Deadly malaria takes its toll in Guadalcanal, Africa, New Guinea, Burma and other war areas. Quinine conquers this disease faster than any other drug, most clinicians now admit. It is irreplaceable for patients having undesirable side-reactions when treated with synthetics, such as atabrine.

"Our medical officers are using the synthetic antimalarial drugs whenever it is possible to do so," declares Rear Admiral Ross T. McIntire, Surgeon General of the U. S. Navy, "but the need for more quinine is becoming increasingly urgent as the number of men fighting in malarious regions increases and the stockpile dwindles."

Several hundred thousand ounces of this vital drug, it is estimated, are now stored in the prescription laboratories of the nation. So the War Production Board, Defense Supplies Corporation and American Pharmaceutical Association are cooperating in an appeal to every retail and hospital pharmacist of your community. Stocks of quinine are mailed to the Institute of Pharmacy to be inspected, sorted and sent to laboratories. It will then be reprocessed for use by the armed forces.

The quinine pool was originated by Dr. Ivor Griffith and associates at the Philadelphia College of Pharmacy and Science. Twelve thousand ounces, collected mainly through Pennsylvania pharmacists, has just been shipped to laboratories, Dr. Griffith announces. The success of this project reveals the likely importance of the quinine pool when adopted on a national scale.

In return for war-scarce quinine the pharmacist will receive a certificate stating that his stock has been given "to combat malaria among the armed forces

fighting the Axis enemy in tropical areas." It is an invaluable contribution, officials point out, because money cannot buy new stocks of quinine. Cinchona trees from which quinine was obtained are in Japanese hands.

"The American Pharmaceutical Association welcomes this opportunity," says Dr. E. F. Kelly, secretary, "to pool its staff and facilities with those of the war agencies of the government in tackling one of the greatest projects ever undertaken by organized pharmacy in the United States."

In the South, where malaria is prevalent, quinine will gradually be replaced by totaquine, a new antimalarial mixture now obtained from South American cinchona trees. This can be used effectively to treat malaria in this country, but so far the product has not been

stable enough to reach malaria-stricken troops abroad in good condition.

Science News Letter, January 30, 1943

ENGINEERING

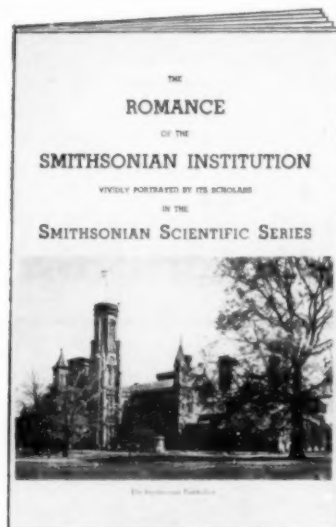
Wired-Radio Programs Used In Army Camps

► WIRED-RADIO programs are now given in several Army camps by the U.S.O. for the entertainment of the soldiers. The equipment is operated by the Army, which uses it for other purposes as well. Civilian defense units are using the wired-radio in their work in a number of key cities. So it may be said to be playing its part in the war effort.

Wired-radio programs are distributed over power lines instead of being radiated through space by means of transmitting antennae. They are picked up with the ordinary broadcast receiver. They are particularly of interest to communities not in the primary service area of any long-wave broadcasting station.

As many as 40 stations could operate at the same time on the broadcast band in any locality without interaction with nearby similar systems, it is stated by *Electronics* (January).

Science News Letter, January 30, 1943

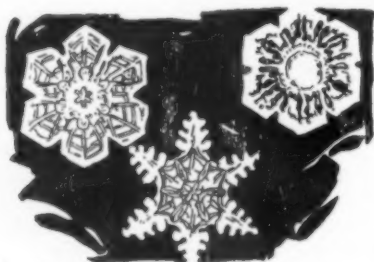


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Individual snow crystals are almost always flat and six-sided; but within these limits they show infinite variation. Indeed, it is probable that among the billions of billions of snow crystals that have fallen in the long geological history of the world no two have ever been exactly alike. Certain it is that no human observer has ever found two of them identical.

There are, however, certain general types. If snow is falling on a very cold, rather dry day, the individual crystals are likely to be rather small, and severely plain in outline—straight-sided and with little ornamentation. Such crystals are usually formed at great heights, in air containing relatively small percentages of moisture, so that they grow slowly. High cirrus clouds commonly contain crystals of this kind.

On the other hand, if it is not very cold and the air is rather moist, you are more likely to find larger crystals in the form of six-pointed stars, often of very intricate and beautiful filigree patterns. These crystals, states Prof. W. J. Humphreys of the U. S. Weather Bureau, are normally formed at lower cloud levels with high humidities.

There is, of course, no sharp division between the two classes, as there are no sharp dividing lines anywhere in the great fluid realm of the weather. Instead, you will find all kinds of intermediate forms, depending on the elevation of the clouds where they were formed and the degree of humidity.

Not all snow crystals are of the flat, plate-like type. There are also rod- or needle-shaped crystals, which are also found in very lofty cirrus clouds. These do not often descend to earth, except on mountaintops or in the Far North. Once in a while you will find tiny pyramids of ice, which are still another snow-crystal type. Occasionally also you will see a compound crystal—a rod-shaped one that has had a pair of flat plates formed

at its ends, forming the so-called dumb-bell or cuff-link pattern.

Many snowflakes, especially in wet storms, are formed by the sticking together of several crystals, with outlines all jumbled and obscure. If you run into this kind, better give it up for the day; they aren't at all satisfactory objects for study.

Science News Letter, January 30, 1943

GENERAL SCIENCE

Smithsonian Institution Converts to War Projects

► SMITHSONIAN Institution has converted to war work in every branch possible, Dr. Charles G. Abbot, secretary, reported to the Board of Regents of the Institution at their annual meeting in Washington. The staff has answered hundreds of requests for technical information from the Army, Navy and other war agencies.

Laboratories and instrument shops are working nearly full time on war projects. Anthropologists furnish information on the strategic areas and their peoples, Dr. Abbot stated.

Geologists of the Institution are investigating mineral resources in the United States and Mexico; ores and minerals are analyzed for war purposes.

From the field of war operations, biologists receive strange plants and insects for identification.

The department of engineering and industries supply authorities with extensive information on woods, fibers and their substitutes.

Dr. Abbot also reported that the Institution is engaged in several large scientific projects in the field of Latin-American cooperation.

Besides these war activities, Smithsonian continues a number of projects which will be of value in the peace to come.

Science News Letter, January 30, 1943

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• New Machines and Gadgets •

❁ A NEW FIXTURE for fluorescent lights cancels glare from the bottom of fixtures and redirects the light over the ceiling. By improved reflecting materials and different design, the manufacturer states that a uniform brightness is obtained in the entire field of vision, lessening eye strain.

Science News Letter, January 30, 1943

❁ AN IMPROVED inter-office communication system permits any number of stations to hold a private conference without interruption or eavesdropping from stations outside the conference group. When a conferee is called, he is signalled by a light that the call is waiting. If he is busy, the caller receives a busy signal light. The unit is operated by push button controls. Each station has individually controlled volume. With earphones, the system may be used like a telephone. Peak efficiency is claimed with units as far as 3,000 feet from one another.

Science News Letter, January 30, 1943

❁ RECORD AMOUNTS of cellulose acetate plastic are now being used for transparent sections of gliders and training ships. Sheets are easily formed into cockpit enclosures and gun turrets. The plastic also has many other war uses, such as shatter-resistant windshields, windows and gas mask lenses.

Science News Letter, January 30, 1943

❁ AN IMPROVED MATCH book has been patented which ignites each match as it is withdrawn from the folder but prevents stray sparks from reaching other matches in the book. These pull-matches will be safe to use and inexpensive to manufacture, the inventor maintains.

Science News Letter, January 30, 1943

❁ TAILORED PROTECTIVE clothing for women welders styled according to accepted dressmaker patterns, is now on the market. Made of chrome-tanned cowhide, the new apparel is light in weight, yet gives positive protection against sparks, the manufacturer states. A leather cap, looking somewhat like a bathing cap, completes the outfit.

Science News Letter, January 30, 1943

❁ THE NEW PHOTOELECTRIC color grader shown in the picture, rapidly inspects rosin, naval stores products and other resins. The instrument eliminates errors of human color graders which are due to eye fatigue, and is



accurate despite dirt or surface imperfections of the samples analyzed. The apparatus, consisting of a light source, colored glass filters, and a photocell, has a wide range of applications, the inventor points out.

Science News Letter, January 30, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 141.

MEDICINE

Breathing Rhythm Change Sign of Impending Death

➤ A SIGN of impending death in patients with malignant high blood pressure has been discovered in a change of breathing rhythm believed never before described.

Announcement of this discovery is made by Dr. H. O. Gunewardene, radiologist at General Hospital in Colombo, Ceylon, in the *British Medical Journal* (Oct. 3).

Even when the patient does not look seriously ill, Dr. Gunewardene reported, duration of life in the cases he has observed is not more than six weeks after the changed breathing rhythm sets in. He describes the patient's changed breathing as follows:

• RADIO

Saturday, February 6, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Robert W. Rodman, editor of the practical edition of the *Journal of the American Pharmaceutical Association*, will discuss quinine.

Monday, February 1, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Fighting Infections" will be the subject of the program.

"The patient is generally quiet and lies flat on the back without a suggestion of the breathlessness of the cardiac (heart) type which previously had been well marked. A little restlessness, not continuous, is often observed; he opens his mouth frequently and breathes as though he is yawning half-heartedly. Occasionally he is irrational. Sometimes there is maniacal excitement; at other times a little drowsiness suggestive of a uraemic state. Uraemic twitching or convulsions were not observed.

"These variations in the respiratory rhythm in association with malignant hypertension have not been described before, so far as I can gather from the literature available in Ceylon. Their cause has yet to be explained."

Science News Letter, January 30, 1943

In prewar days 95% of the olive oil consumed in this country was imported.

A typical place-name in British-held Madagascar is Andranomanjakelhibe (not to be pronounced "Wipers").

There are more than 74 million cattle on U. S. farms and ranches today, said to be the largest number in history.

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First Glances at New Books

► **SPRING IS COMING**, and it will bring mushrooms as inevitably as it brings bluebirds and violets. Many a potential tasty dish goes to waste because most of us are never sure but that the mouth-watering growths we find in woods or pasture may be as treacherous as they are tempting. Prof. Clyde M. Christensen's **COMMON EDIBLE MUSHROOMS** tells authoritatively yet entertainingly how to make the critical identifications, in plain English text and unmistakable illustrations. (Univ. of Minnesota Press, \$2.50).

Science News Letter, January 30, 1943

► **EPIC POETRY OF FIJI** is the subtitle of a beautifully translated collection of South Sea Island songs, tales and stories offered by Buell H. Quain: **THE FLIGHT OF THE CHIEFS** (Augustin, \$4). It is well annotated and there is a glossary, so that even a non-anthropologist can find much pleasure in the reading.

Science News Letter, January 30, 1943

► **NATURE LORE**, with a thousand fascinating facets, fills the five handy-sized volumes published under that title (C. C. Nelson, the set \$10; separately \$2 each). The author, Norse-born Dr. H. P. K. Agersborg, shows himself a far better knower of his adopted America than most who are native here. He is very seriously conservation-minded, and a large proportion of the essays stress that very important subject. This is a set to be recommended for the reference shelf of any school or nature camp where interest in outdoor things is really serious.

Science News Letter, January 30, 1943

► **HORSES, GUNS** and the white man's insatiable willingness to buy furs did strange things to Indians of the northern Plains region. What happened to one people is told compactly by Oscar Lewis in **THE EFFECTS OF WHITE CONTACT UPON BLACKFOOT CULTURE**, a centennial anniversary publication of the American Ethnological Society (Augustin, \$1.50).

Science News Letter, January 30, 1943

► **BOTH SCIENTISTS AND LAY PERSONS** concerned with the vitamin and other nutrient values of foods—and who is not today—will find Alice V. Bradley's **TABLES OF FOOD VALUES** (Manual Arts Press, \$3.50), extremely useful. Besides some brief discussion of

food components of the diet and of menu planning, and a copy of the National Research Council's recommended daily allowances for specific nutrients, the book gives two tables of food values: one by 100 gram portions for the scientists; the other by average servings, with recipes for some of the foods so the housewife will know whether her angel food cake, for example, has the same value as that listed in the table.

Science News Letter, January 30, 1943

► **A CHEMICAL APPROACH** to the problems of life forms and their development is made in **BIOCHEMISTRY AND MORPHOGENESIS**, by Prof. Joseph Needham of Cambridge University (Macmillan, \$12.50). It is a book definitely for professional zoologists, especially for the physiologist and the morphologist; but for this limited audience it is a work of prime importance.

Science News Letter, January 30, 1943

► **BOTANISTS WILL** appreciate the listing of local and regional floras carefully compiled by S. F. Blake, senior botanist, and Alice C. Atwood, botanical bibliographer, in the U. S. Department of Agriculture, and published as **GEOGRAPHICAL GUIDE TO THE FLORAS OF THE WORLD**. This first volume covers the literature of the world except Europe and Asia. (Govt. Print. Off., 75c.)

Science News Letter, January 30, 1943

► **WHAT IS AQUINITE? HMTD? Novit? Tetranitromethane?** What are their respective properties and uses? You probably can't answer all these, even if you are an officer of Engineers or Ordnance. All the answers, and hundreds of others, are concisely and authoritatively given in Dr. Jules Bebie's **MANUAL OF EXPLOSIVES, MILITARY PYROTECHNICS AND CHEMICAL WARFARE AGENTS** (Macmillan, \$2.50).

Science News Letter, January 30, 1943

Just Off the Press

ART. XII: LIST OF THE HUMMINGBIRDS IN THE COLLECTION OF THE CARNEGIE MUSEUM—W. E. Clyde Todd—Carnegie Museum, Pittsburgh, Pa. 99 p., 70c. (Annals of the Carnegie Museum, vol. xxiv, p. 271-370).

A.S.T.M. STANDARDS ON CEMENT: Specification, Chemical Analysis, Physical Tests—A.S.T.M. Committee C-1 on cement—American Society for Testing Materials, 119 p., \$1.35.

BASIC PRINCIPLES OF WEATHER FORECASTING—Victor P. Starr—Harper—299 p., illus., \$3.

CALCULART—R. E. Frickey. Instruction book, with 50 charts, \$3.

CAN OUR CITIES SURVIVE—José Luis Sert—Harvard Univ. Press—259 p., illus., \$5.

THE CARNIVOROUS PLANTS—Francis Ernest Lloyd—Chronica Botanica Co., 270 p., 38 plates, illus., \$6.

CELLULOSE CHEMISTRY—Mark Plunguian—Chemical Publishing Co., 97 p., illus., \$2.25.

THE CIBONEY CULTURES OF CAYO REDONDO, CUBA—Cornelius Osgood, and **ARCHAEOLOGY OF THE MANIABON HILLS, CUBA**—Irving Rouse—Yale Univ. Press, 186 p., illus., \$3.50. (Yale University Publications in Anthropology, numbers twenty-five and twenty-six).

COMPLEX VARIABLE & OPERATIONAL CALCULUS WITH TECHNICAL APPLICATIONS—N. W. McLachlan—Cambridge (Macmillan), 355 p., \$4.75.

DIFFERENTIAL EQUATIONS—Ralph Palmer Agnew—McGraw-Hill, 341 p., illus., \$3. "For students with a reasonably good knowledge of elementary calculus."

ESSENTIALS OF NUTRITION—Henry C. Sherman and Caroline Sherman Lanford—Macmillan—442 p., illus., \$3.50. 2d. ed.

GENERAL PHYSICS: For the Laboratory—Lloyd W. Taylor, William W. Watson, and Carl E. Howe—Ginn—184 p., 107 record sheets, illus., \$2. Revised edition. Textbook.

THE GREATEST EYE IN THE WORLD—A. Frederick Collins—Appleton-Century, 266 p., illus., \$3. A history of astronomical telescopes with descriptions of present day observatories both here and in England.

KNOW YOUR NAVY NOW—Francis A. Ford—Cornell Maritime Press—84 p., illus., \$1.

LABORATORY MANUAL ON FUNDAMENTAL PRINCIPLES OF BACTERIOLOGY—A. J. Salle—McGraw-Hill, 184 p., illus., \$1.50.

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION AND FINANCIAL REPORT OF THE EXECUTIVE COMMITTEE OF THE BOARD OF REGENTS 1942—Smithsonian, 112 p., illus., 25c.

SUBSTITUTES—H. Bennett—Chemical Publishing Co., 225 p., \$4. "A handbook of substitutes and alternatives for chemicals, metals, fibers and other commercial products, including a plan for choosing proper substitutes."

THE THEORY AND PRACTICE OF HEAT ENGINES—D. A. Wrangham—Macmillan—756 p., illus., \$10.50.

THE TOTAL AND FREE ENERGIES OF FORMATION OF THE OXIDES OF THIRTY-TWO METALS—Maurice deKay Thompson—The Electrochemical Society, Inc., 89 p., free. Direct application to Electrochemical Society.